

What is claimed is:

1. Device for measuring time-resolved volumetric flow processes in particular of injection processes in internal combustion engines with a translatory volume difference sensor comprising a piston arranged in a measuring chamber and a data acquisition device that senses the displacement of the piston, which data acquisition device is connected to an evaluation unit, characterized in that a pressure sensor (14) is arranged in the measuring chamber (4) in addition to the data acquisition device (6) sensing the displacement of the piston, which pressure sensor (14) is connected to the evaluating unit (12) such that by means of the measured values of the pressure sensor (14), a correction of the flow amount ascertained from the measured values of the data acquisition device (6) takes place in the evaluating unit (12).
2. Device for measuring time-resolved volumetric flow processes in particular of injection processes in internal combustion engines according to Claim 1, characterized in that a rotary displacer (8) is assigned to the translatory volume difference sensor (4, 5, 6), which displacer is driven via a motor (10) depending on the adjacent volume difference, whereby the measuring chamber (4) is arranged in an intake duct (3) that behind the translatory volume difference sensor (4, 5, 6) in the flow direction opens into an outlet duct (11) and the rotary displacer (8) is arranged in a bypass line (7) to the translatory volume difference sensor (4, 5, 6), whereby the rotary displacer (8) is controlled such that during one work cycle the speed of the displacer (8) is constant and essentially corresponds to the average flow over the entire work cycle.
3. Device for measuring time-resolved volumetric flow processes in particular of injection processes in internal combustion engines according to one of Claims 1 or 2, characterized in that the data acquisition device (6) is composed of a sensor whose produced voltage represents a measurement for the displacement of the piston (5) and that continuously senses the displacement of the piston (5) in the measuring chamber (4).

4. Device for measuring time-resolved volumetric flow processes in particular of injection processes in internal combustion engines according to one of the preceding claims, characterized in that the piston (5) has the same specific weight as the fluid to be measured.
5. Device for measuring time-resolved volumetric flow processes in particular of injection processes in internal combustion engines according to one of the preceding claims, characterized in that a temperature sensor (15) is arranged in the measuring chamber (4), which sensor is connected to the evaluating unit (12).
6. Device for measuring time-resolved volumetric flow processes in particular of injection processes in internal combustion engines according to one of the preceding claims, characterized in that the sensor (6) is an optical sensor, an inductive sensor, or a sensor that works on the eddy current principle.
7. Device for measuring time-resolved volumetric flow processes in particular of injection processes in internal combustion engines according to one of the preceding claims, characterized in that the rotary displacer (8) is embodied as a gear pump.
8. Device for measuring time-resolved volumetric flow processes in particular of injection processes in internal combustion engines according to one of the preceding claims, characterized in that the motor is embodied as a servo motor (10) and has a movement sensor (13) connected to the evaluating unit (12) and to an electronic control unit (16), whereby the signal of the movement sensor (13) represents a measurement for the speed of the rotary displacer (8).
9. Device for measuring time-resolved volumetric flow processes in particular of injection processes in internal combustion engines according to Claim 8, characterized in that the movement sensor (13) is embodied as a pulse generator disk.
10. Device for measuring time-resolved volumetric flow processes in particular

of injection processes in internal combustion engines according to one of the preceding claims, characterized in that the hydraulic length from a fuel injection valve (1) to the intake side of the rotary displacer (8) is equal to the hydraulic length to the outlet side of the rotary displacer (8).

11. Device for measuring time-resolved volumetric flow processes in particular of injection processes in internal combustion engines according to one of the preceding claims, characterized in that the measuring device (2) is arranged between at least one fuel injection valve (1) and a delay time tube.